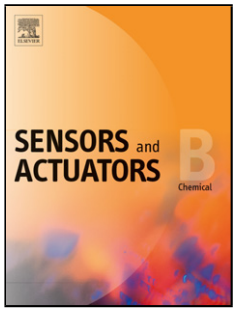

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Recognition and quantification of HSA: A fluorescence probe across α-helices of site I and site II

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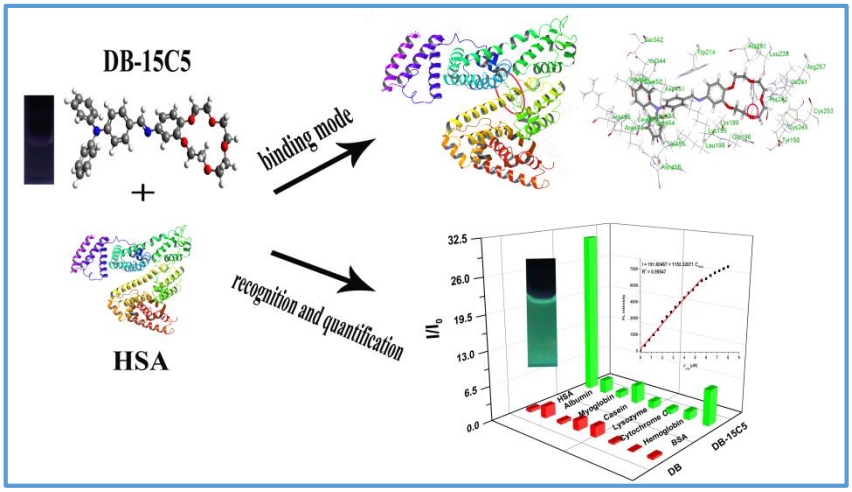
Graphical Abstract



DB-15C5, consisting of 15-crown-5 ester and triphenylamine group, exhibited TICT properties in physiological environment. The specificity of DB-15C5 towards HSA over other proteins including BSA was verified. The docking results and experiments both proved that subdomain IIA plays a crucial role in binding affinity of DB-15C5 upon HSA, which involves in π-π stacking interactions and H-bond, but subdomain IIIA actually has an important effect in restriction of TICT excited state of DB-15C5. Good calibration graphs of the response to HSA and rather low LODs (1.7 nM in PBS, 29.5 nM in urine) enabled us to develop a potent functional molecular probe to determine the content of HSA in actual biosystems, not affected by other proteins and coexisted ions.